HEALTH CARE IN WEST VIRGINIA

A Workforce Supply and Demand Analysis Report

October 2014
A Special Thank You to Our Funder

The West Virginia Rural Health Association (WVRHA) is grateful for the generous financial contributions from the following workforce project funder:

Claude Worthington Benedum Foundation
Commissioned by the West Virginia Rural Health Association, this report focuses upon the current and future healthcare needs of the citizens and the impact this currently has upon the healthcare providers and the communities they serve. This report was created in cooperation with the National Center for the Analysis of Healthcare Data.
# Table of Contents

## INTRODUCTION

- Health Care in West Virginia

## NEXT PHASE OF THE PLAN

- West Virginia Rural Health Data Portal

## DATA SOURCES

- Introduction to Data Sources

## LIMITATIONS

- Limitations of the Data

## BASELINE

- Baseline Data Summary

## HEALTHCARE WORKFORCE SUPPLY (INSTATE)

<table>
<thead>
<tr>
<th>Profession</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audiologists</td>
<td>18</td>
</tr>
<tr>
<td>Advanced Practice Registered Nurses: Nurse Practitioners, Nurse Anesthetists, Midwives and Certified Nurse Specialist</td>
<td>22</td>
</tr>
<tr>
<td>Chiropractors</td>
<td>26</td>
</tr>
<tr>
<td>Dentists</td>
<td>30</td>
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<tr>
<td>Dental Hygienists</td>
<td>34</td>
</tr>
<tr>
<td>Optometrists</td>
<td>38</td>
</tr>
<tr>
<td>Physicians: Allopathic Physicians and Osteopathic Physicians</td>
<td>42</td>
</tr>
<tr>
<td>Podiatrists</td>
<td>50</td>
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<td>66</td>
</tr>
<tr>
<td>Speech-Language Pathologists</td>
<td>70</td>
</tr>
<tr>
<td>Primary Care Workforce</td>
<td>74</td>
</tr>
</tbody>
</table>

## HEALTHCARE WORKFORCE SUPPLY (CONTIGUOUS STATES’ COUNTIES)

- Health Care in West Virginia

## HEALTHCARE WORKFORCE TREND ANALYSIS

- Physicians: Allopathic and Osteopathic

## HEALTHCARE WORKFORCE DEMAND

- Health Care in West Virginia
INTRODUCTION

The West Virginia Rural Health Association (WVRHA) is a non-profit 501(c)(3) organization with a volunteer Board of Directors (BOD) elected from healthcare organizations and individuals from around the state. (To see Board members, please visit: http://www.wvrha.org/index.php?nav=board). The mission of the West Virginia Rural Health Association is to unite people, communities and organizations to strengthen rural health in West Virginia.

WVRHA membership includes a variety of people and organizations that are interested in the health of rural West Virginia by working together to identify the health care concerns and find ways to improve services in our communities.

In 2011, during WVRHA’s strategic planning process, the need to conduct an environmental assessment of current healthcare workforce supply was identified. This assessment was completed in October 2012, with a report created by the West Virginia Rural Health Research Center. The next phase was to assess the current healthcare demand/needs of all West Virginia citizens and the impact upon current the workforce and the communities they serve. Additionally, the major provisions of the 2010 Patient Protection Affordable Care Act (PPACA) implemented in 2014 must be considered and the impact newly eligible citizens may have upon the current healthcare delivery system.

In June of 2013, WVRHA moved forward with the next phase of the process, to generate a demand report as a partner to the supply report – Health Care Demand Report. The National Center for the Analysis of Healthcare Data (NCAHD) was contacted to discuss their ability to generate a report that would provide data and visualizations (maps), to use this information to inform West Virginia rural health stakeholders, citizens, policy and decision-makers on the where and how their health care demands were affecting the state.

In April of 2014, WVRHA contracted NCAHD to generate an updated healthcare workforce supply and demand summary report to include additional providers, healthcare workforce trend analysis (2007-2014), primary care (physicians, nurse practitioners and physician assistants) workforce demand analysis and updated specialty physicians. All of the new data content from this report will be integrated into the West Virginia Health Data portal by the end of November 2014.

In order to facilitate planning for future workforce needs for health care professionals, the West Virginia Legislature recently passed H.B. 4245. This bill amends the Code of West Virginia by adding a new section requiring reporting on the anticipated retirement dates, age, gender, percentage of time working direct services, percentage of time working administration, and county of practice for the membership of six state health care licensing boards. The impacted boards are the West Virginia Board of Medicine, the West Virginia Board of Examiners for Registered
Health Care in West Virginia - A Workforce Supply and Demand Analysis Report

Professional Nurses, the West Virginia Board of Examiners for Licensed Practical Nurses, the West Virginia Board of Pharmacy, the West Virginia Board of Dentistry, and the West Virginia Board of Osteopathy. This additional data will be included only as aggregate values in the boards’ 2015 annual reports (due on or after January 1, 2016).

NEXT PHASE OF THE PLAN

For this report, NCAHD worked with Ms. Debrin Jenkins, WVRHA Executive Director. The WVRHA envisioned the WV Health Data Portal as a free resource available to anyone needing current facts about the health workforce in West Virginia and a demonstration of the impact the healthcare workforce mal-distribution and shortages have upon current and future West Virginians. WVRHA is committed to provide yearly updates while adding additional disciplines and specialties to the portal. This comprehensive information will describe health care shortages in rural areas serve as an economic development and decision making tool for all West Virginia stakeholders.

WEST VIRGINIA RURAL HEALTH DATA PORTAL

Portal Address:  http://ncahd.org/wvhealthdataportal/

As a means to bring awareness to rural health, the West Virginia Health Data Portal was launched during the January 2013 Rural Health Legislative Day in Charleston, West Virginia. The entire content from the 2013 West Virginia Workforce Demand report along with supply data from NCAHD’s 2013 enhanced state licensure were integrated into the internet-based interactive web mapping tool. In addition to being able to view all of the healthcare workforce data in the
previously published supply and demand reports, the following functionalities enable the public to perform the following:

- Analyzing Specialty Physician Needs through Health outcomes
- Viewing Aging providers in rural and underserved areas
- Drive time distance analysis
- Viewing the potential impact of the Affordable Care Act
- Using buffer tool to determine potential workforce from clinics
- Viewing service region for a healthcare facility based on distance or time
- Determining the workforce/patient demographics in service region

As a part of the WVRHA’s commitment to meeting their mission, nine (9) FREE portal training sessions were provided throughout West Virginia with another eleven (11) FREE training sessions being scheduled during 2014 and 2015. (Important note: Contact Ms. Debrin Jenkins if you or your stakeholder group would like to either host or participate in a portal training session.) During the training sessions, participants are given step-by-step guides on how to use the portal and how to answer the following healthcare questions as example of what the portal can provide:

- Is there equitable disparity across all of the professions in rural vs. urban workforce distribution?
- Where are the areas in the state with higher patient populations with multiple chronic diseases?
- How different are the socio-economic determinants in my area of concern or across the state?
- How will aging workforce impact access to care?
- Are healthcare training opportunities available in rural areas?
- What is the distance from my clinic to the hospital?
- What is the service area around the hospital/clinic?
- How many people are potentially served within 45 minutes or 45 miles of a healthcare facility?
- How many dentist or dental hygienists are within 25 minutes of my town?

Components of the next phase for the portal are already underway, with the generation of this combined healthcare workforce supply and demand summary report. This year the following providers will be included in the portal:

- Specialty Physicians: Oncologists, Psychiatrist, OB/GYN, Geriatricians, Emergency Medicine, General Surgeons
- Non-physicians: Psychologists, Podiatrists, Occupational Therapists, Social Workers, Physical Therapists, Speech Language

Additionally, the healthcare providers licensed in the adjacent states will be added to the portal to help improve understanding about the entire healthcare workforce landscape that impact West Virginia’s citizen’s access to care. The results of trend analysis by NCAHD to measure the migration of primary care workforce (physicians, nurse practitioners and physician assistants) from 2012 to 2014 will be included in the portal. NCAHD will conduct research to create a new specialty physician needs ratio based upon population in order to provide an
updated perspective of specialty physicians needs compared to the ratios utilized in the previous report. The results of this research will be included in the portal.

DATA SOURCES

The primary source for the provider data is their respective state licensure board which NCAHD collects and process annually (Since 2007) to create the Enhanced State Licensure (ESL) dataset. In 2013, NCAHD determined the quality of certain attributes from the National Provider Index (NPI) met the center’s QA/QC standards and integrated these attributes into the current ESL. (For more information on this process, see Appendix A-NCAHD’s National Data Collection Process). For this report, NCAHD utilized data collected and processed on March 2014 for the following healthcare providers: Physicians, Nurse Practitioners, Physician Assistants, Pharmacists, Dentist, Dental Hygienists, Podiatrists, Psychologists, Certified Registered Nurse Anesthetists, Midwives, Audiologists, Speech Language Pathologists, Physical Therapists, Social Workers, Optometrist and Chiropractors.

Demographic data came from the 2010 U.S. Census

LIMITATIONS

The state licensure process for healthcare providers collects numerous elements of information (data) that are not released to the public, including the number of hours they practice, whether they accept Medicare, etc.; therefore, we assume that each licensee is equal to one Full-time equivalent (FTE).

Additionally, for those providers that practice in more than one location, we utilize their primary practice site only in the analysis since the additional practice site information is not publically released.

For the pharmacists, it is known that the licensure board only publically released the provider’s home address and not their practice address.

The physician specialty information for physicians utilized is the physician’s primary specialty since the percentage they may work in a sub-specialty is not publically released information.

BASELINE

Many factors affect health outcomes, quality of healthcare delivery systems and workforce supply. Being able to project healthcare demand is complicated with our ever changing healthcare delivery systems as the Patient Protection Affordable Care Act is being implemented across the country. Previous healthcare workforce projections (in the 1990s) were based upon an expectation that the delivery models would be closed, tightly managed care networks and would greatly decrease the demand for subspecialty care\(^1\). Much has been published about the burgeoning aging population, but some of the other influencers, such as income, emerging new technologies, changing disease profiles, changing public health priorities and the growing focus upon prevention programs greatly impact all stakeholders attempting to address their “niche” of healthcare issues\(^2\).
The following series of maps provide baseline data on West Virginia’s population relative to certain demographic, health outcomes and current insurance status for use in comparative analysis. In Figure 1 table provides the median income, median age, county population and density.
Demographic influencers can directly impact access to care and the ability of areas to attract and retain healthcare services and providers, especially in rural areas. Population density diminishes making the affordable provision of care more difficult, with these populations relying heavily upon services in adjacent states (Maryland, Kentucky, Ohio, Pennsylvania, Virginia). Lower population density coupled with higher percentages of elderly population as seen in below indicate greater demand of healthcare services in these area (Figure 2).
FIGURE 2 - ELDERLY POPULATIONS (%)
The national average of population on Medicaid is 21%, with West Virginia's state average at 22%. In Figure 3 below, there are obvious clusters of higher percentage of Medicaid beneficiaries. On average, 16% of the population is covered by Medicaid, with 21% of West Virginia's population covered by Medicaid.
FIGURE 3 - POPULATION RECEIVING MEDICAID BENEFITS
Health Care in West Virginia - A Workforce Supply and Demand Analysis Report

With the current focus on healthcare in the United State being the impact of chronic diseases, such as Obesity, it was important to demonstrate certain related health outcomes to current workforce supply in this needs assessment. This is particularly true for the aging population with over 40 percent of the 65-74 age group considered obese\(^4\). It is predicted that between 2010 and 2030 there will be an additional twenty-seven million Americans with hypertension, eight million with coronary heart disease, and three million with heart failure\(^5\).

Since 1990, West Virginia has seen a steady increase in the percentage of the population estimated to be obese (see Figure 4 below).

![](image)

**FIGURE 4-GRAPH OF WEST VIRGINIA OBESITY TREND**

Additionally, certain health outcomes when correlated can help stakeholders be more effective in targeting their efforts, so within this report, there will be demonstrations of these assumptions (See Figure 5 - Diabetes and Obesity).
FIGURE 5 - DIABETES AND OBESITY
RESULTS

The importance of growing and sustaining a primary care workforce and its related infrastructure (e.g., education, facilities, policy, etc.) has been the topic of research and discussion for decades. In the 1990s, public policy and funding efforts were aligned to increase the primary care workforce inasmuch that family medicine training efforts across the country grew 34%. Although this increase occurred, the growth of the subspecialist workforce outstripped that of primary care physicians. Since 1997, U.S. medical school graduate matches in family medicine and general internal medicine programs have fallen by nearly 50%. In West Virginia, a large portion of the Allopathic primary care physicians are no longer practicing but there has been a steady increase in the number of Osteopathic Primary care physicians (see Appendix B - West Virginia Primary Care Workforce County Trend Analysis). The state average FTE to 10,000 population is 18.2 primary care provider to population.

With 66% of all Osteopathic Physicians practicing a primary care specialty as compared to 41% of Allopathic Physicians, the investment made by the West Virginia School of Osteopathic Medicine is making an impact upon access to primary care in West Virginia. As for aging healthcare workforce, 70% of the aging Osteopathic physicians (over 55 years old) are practicing a primary care specialty and 23% of the Allopathic physicians aging are practicing a primary care specialty. To view the county and zipcode numbers of providers, please view the Appendices B & C on WVRHA website.

West Virginia institutions of higher education offer an array of health profession training programs, many of which emphasize training in primary care and the importance of providing care in rural and underserved area of the state. These education and training programs are the foundation of statewide efforts to increase the supply and more effective distribution of primary care providers. To complement the training programs, West Virginia also significantly invests in pipeline programs, community-based training for students in primary care training programs, and incentive programs for primary care providers.

A host of pipeline programs are offered in middle school, high school, and college and allow students to explore healthcare careers. Each of the state’s three academic health centers located at Marshall University, the West Virginia School of Osteopathic Medicine, and the West Virginia University Health Sciences Center partner with communities across the state to host enrichment programs like health career clubs, summer camps, and shadowing programs. Many of these activities are conducted in partnership with the state’s five Area Health Education Center regional centers.

Scores of primary care providers in West Virginia volunteer as clinical preceptors to ensure students and residents incur meaningful experiences while on clinical rotations. The state-funded Rural Health Initiative provides significant funding to support student rotations and housing, community-based research, incentive stipends, and intensive field experiences for students and residents most interested in primary care and rural health.

In addition to federal programs like the National Health Service Corps, West Virginia offers several state-funded incentive programs designed to attract a variety of primary care providers to underserved areas of the state. These programs include the Bureau for Public Health's Recruitment and Retention Community Project and the West Virginia Higher Education Policy Commission's Health Sciences Scholarship Program and offer between $10,000 and
$50,000 in assistance to primary care providers in exchange for at least a two-year service obligation.

HEALTHCARE WORKFORCE SUPPLY (IN STATE)

For the following maps, the provider’s practice site is shown relative to county boundaries and major cities. Where there are clusters of providers, the assumption is that multiple providers practice at the same facility/site. For each provider there are four maps: Individual provider distribution, county aggregate (with the number practicing within the county), normalized county aggregated (to 10,000 population) and regional aggregation (with the total by region indicated).
Audiologists

FIGURE 6- AUDIOLOGISTS BY PRACTICE SITE
FIGURE 7-AUDIOLOGIST BY COUNTY TOTALS
FIGURE 8-AUDIOLOGISTS NORMALIZED BY COUNTY POPULATION
FIGURE 9-AUDIOLOGISTS BY REGION
Advanced Practice Registered Nurses: Nurse Practitioners, Nurse Anesthetists, Midwives and Certified Nurse Specialist

FIGURE 10-APRN BY PRACTICE SITE
FIGURE 11-APRN BY COUNTY TOTALS
FIGURE 12-APRN NORMALIZED BY COUNTY POPULATION
FIGURE 13-APRN BY REGION
Chiropractors

![Chiropractors in West Virginia (2014)](image)

**FIGURE 14-CHIROPRACTOR BY PRACTICE SITE**
**FIGURE 15-CHIROPRACTORS BY COUNTY TOTALS**

[Map showing the distribution of chiropractors by county in West Virginia (2014)]

- **County** | **Chiropractors**
  - Barbour | 3
  - Berkeley | 40
  - Boone | 15
  - Braxton | 6
  - Brooke | 35
  - Cabell | 133
  - Calhoun | 3
  - Clay | 6
  - Doddridge | 3
  - Fayette | 42
  - Gilmer | 3
  - Grant | 9
  - Greenbrier | 29
  - Hampshire | 8
  - Hancock | 14
  - Hardy | 6
  - Harrison | 71
  - Jackson | 41
  - Jefferson | 25
  - Kanawha | 276
  - Lewis | 15
  - Lincoln | 9
  - Logan | 31
  - Marion | 31
  - Marshall | 24
  - Mason | 18
  - McDowell | 7
  - Mercer | 68
  - Mercer | 68
  - Pendleton | 0
  - Pleasants | 3
  - Pocahontas | 0
  - Preston | 4
  - Putnam | 7
  - Raleigh | 14
  - Randolph | 6
  - Ritchie | 1
  - Roane | 3
  - Summers | 1
  - Taylor | 1
  - Tucker | 1
  - Tyler | 0
  - Upshur | 4
  - Wayne | 4
  - Webster | 0
  - Wetzel | 2
  - Wirt | 2
  - Wood | 24
  - Wyoming | 1

*Data Source: West Virginia Board of Chiropractic (2014)*
FIGURE 16-CHIROPRACTORS NORMALIZED BY COUNTY POPULATION
FIGURE 17-CHIROPRACTORS BY REGION
Dentists

**FIGURE 18-DENTISTS BY PRACTICE SITE**
FIGURE 19-DENTISTS BY COUNTY TOTALS
FIGURE 20-DENTISTS NORMALIZED BY COUNTY POPULATION
FIGURE 21 - DENTIST BY REGIONS
Dental Hygienists

FIGURE 22-DENTAL HYGIENISTS BY PRACTICE SITE
FIGURE 23-DENTAL HYGIENISTS BY COUNTY TOTALS
FIGURE 24-DENTAL HYGIENISTS NORMALIZED BY COUNTY POPULATION
FIGURE 25 - DENTAL HYGIENISTS BY REGION
Optometrists

FIGURE 26-OPTOMETRISTS BY PRACTICE SITE
FIGURE 27-OPTOMETRISTS BY COUNTY TOTALS
FIGURE 28-OPTOMETRISTS NORMALIZED BY COUNTY POPULATION
FIGURE 29-OPTOMETRISTS BY REGION
Physicians: Allopathic Physicians and Osteopathic Physicians

FIGURE 30-ALLOPATHIC PHYSICIANS BY PRACTICE SITE
FIGURE 31-OSTEOPATHIC PHYSICIAN BY PRACTICE SITE
Allopathic Physicians by County in West Virginia (2014)

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FIGURE 32-ALLOPATHIC PHYSICIAN BY COUNTY TOTALS
FIGURE 33-OSTEOPATHIC PHYSICIANS BY COUNTY TOTALS

[Map showing the distribution of osteopathic physicians by county in West Virginia (2014)]

[Table showing the number of osteopathic physicians by county]
FIGURE 34 - ALLOPATHIC PHYSICIANS NORMALIZED BY COUNTY POPULATION
Osteopathic Physicians Normalized by County Population in West Virginia (2014)

FIGURE 35-OSTEOPATHIC PHYSICIANS NORMALIZED BY COUNTY POPULATION
FIGURE 36 - ALLOPATHIC PHYSICIANS BY REGION
FIGURE 37 - OSTEOPATHIC PHYSICIANS BY REGION
Podiatrists

FIGURE 38-PODIATRISTS BY PRACTICE SITE
FIGURE 39-PODIATRISTS BY COUNTY TOTALS
FIGURE 40-PODIATRISTS NORMALIZED BY COUNTY POPULATION
FIGURE 41-PODIATRISTS BY REGION
Physician Assistants

FIGURE 42-PHYSICIAN ASSISTANTS BY PRACTICE SITE
FIGURE 43-PHYSICIAN ASSISTANT BY COUNTY TOTALS
FIGURE 44-PHYSICIAN ASSISTANT NORMALIZED BY COUNTY POPULATION
FIGURE 45 - PHYSICIAN ASSISTANTS BY REGION
Pharmacists

FIGURE 46-PHARMACISTS BY PRACTICE SITE
FIGURE 47-PHARMACISTS BY COUNTY TOTALS
FIGURE 48-PHARMACISTS NORMALIZED BY COUNTY POPULATION
FIGURE 49 - PHARMACISTS BY REGION

Physical Therapists
FIGURE 50-PHYSICAL THERAPISTS BY PRACTICE SITE
FIGURE 51-PHYSICAL THERAPISTS BY COUNTY TOTALS
FIGURE 52-PHYSICAL THERAPISTS NORMALIZED BY COUNTY POPULATION
FIGURE 53 - PHYSICAL THERAPISTS BY REGION
Psychologists

FIGURE 54-PSYCHOLOGISTS BY PRACTICE SITE
FIGURE 55-PSYCHOLOGISTS BY COUNTY TOTALS
FIGURE 56: PSYCHOLOGISTS NORMALIZED BY COUNTY POPULATION
FIGURE 57 - PSYCHOLOGISTS BY REGION
Speech-Language Pathologists

FIGURE 58—SPEECH LANGUAGE PATHOLOGISTS BY PRACTICE SITE
FIGURE 59—SPEECH LANGUAGE PATHOLOGIST BY COUNTY TOTALS
FIGURE 60 - SPEECH LANGUAGE PATHOLOGISTS NORMALIZED BY COUNTY POPULATION
Primary Care Workforce

The U.S. primary care workforce consists of physicians specializing in family medicine, general practice, general internal medicine, general pediatrics and obstetrics-gynecology and nurse practitioners (also known as advance practice registered nurses) (NP) and physician assistants (PA).

Currently, the primary care workforce (Primary Care physicians, nurse practitioners and physician assistants) has realized an overall decrease in numbers of 178 (5%) from 2012 (see Appendix B - West Virginia Primary Care Workforce County Trend Analysis). Many other providers saw increases in their numbers, for example the dental hygienists realized an increase of 102 providers, the Psychologists went up 135 providers and the Speech-Language Pathologists increased by 142 providers (see Appendix C - West Virginia All Healthcare Workforce County Trend Analysis). (Note: The following sections of this report contain maps demonstrating the changes readers/stakeholders are encouraged to utilize the West Virginia Health Data portal (http://ncahd.org/wvhealthdataportal/) to view the data interactively and make their own maps.)
FIGURE 62-PRIMARY CARE WORKFORCE BY PRACTICE SITE
FIGURE 63-PRIMARY CARE PHYSICIANS BY PRACTICE SITE
FIGURE 64-PHYSICIAN ASSISTANTS BY PRACTICE SITE
FIGURE 65 - NURSE PRACTITIONERS BY PRACTICE SITE
Over the last decades, as the growth of healthcare utilization has increased, with a reciprocating increase in medication usage. In addition to causing a shortage of pharmacists, this increased demand has necessitated a change in the role the pharmacists from dispensing of medications to providing certain clinical services. As patients, we have become reliant upon this level of healthcare professionalism and especially for the elderly, see the pharmacists as a vital member of their healthcare team. However, as this profession has expanded, their propensity to practice in rural areas was further hampered by the passage of two major policies related to prescription medication payments: Medicare prescription drug discount cards and the Medicare Part D prescription drug benefit. The unintended consequences of making medications more accessible and affordable for senior citizens was that independent pharmacies could not “afford” the prescription drug revenue drop to their already small profit margin causing more than 500 independent pharmacies nationwide to close.

As the population ages, so does their need for healthcare services and subsequent need for medication. Therefore, in attempting to match the projected demand for both pharmacists and pharmacies, the map in Figure 66 below clearly indicates a disconnect within the healthcare delivery system, especially in eastern West Virginia counties of Pocahontas, Pendleton and Tucker.
Pharmacies and Pharmacists in West Virginia (2014)

Percent of the county population age 65 and older
- 8% - 14%
- 15%
- 16% - 17%
- 18% - 20%

Data Sources: West Virginia Board of Pharmacy (2014)

FIGURE 66-PHARMACIES AND PHARMACISTS
HEALTHCARE WORKFORCE SUPPLY (CONTIGUOUS STATES’ COUNTIES)

In general, geography has less influence upon how patients seek healthcare in comparison to the quality of the provider, reference by family member, etc. Therefore, all stakeholders involved in the planning, management, provision and monitoring of healthcare at any level of geography (city, county, state, service region, etc.), will require knowledge about healthcare workforce in West Virginia’s contiguous states (Maryland, Pennsylvania, Ohio, Kentucky, Virginia) to truly be successful. Initially, this report will focus the following actively licensed providers:
FIGURE 67 - PRIMARY CARE PHYSICIANS WITH BORDER COUNTIES178 (5%) FROM 2012 (SEE APPENDIX B - WEST VIRGINIA PRIMARY CARE WORKFORCE COUNTY TREND ANALYSIS).
FIGURE 68- NURSE PRACTITIONERS WITH BORDER COUNTIES
Physician Assistants

FIGURE 69 - PHYSICIAN ASSISTANTS WITH BORDER COUNTIES
Pharmacists

FIGURE 70- PHARMACISTS WITH BORDER COUNTIES
Obstetrics-Gynecology

FIGURE 71- OB-GYN PHYSICIAN SPECIALIST BORDER COUNTIES
Orthopaedic Surgeons

FIGURE 72 - ORTHOPAEDIC SURGEONS WITH BORDER COUNTIES
Nephrologist

FIGURE 73 - NEPHROLOGISTS WITH BORDER COUNTIES

Data Sources: CDC, 2003-2010 Final Data; NCAHD’s Enhanced State Liensuine Data (2014)

* Includes specialists in border counties

Number of deaths per 100,000 population due to nephritis/kidney disease

- Light Purple: 10 - 17
- Medium Purple: 18 - 19
- Dark Purple: 20 - 26
- Dark Green: 27 - 33
Endocrinologists

FIGURE 74 - ENDOCRINOLOGISTS WITH BORDER COUNTIES
HEALTHCARE WORKFORCE TREND ANALYSIS

An important component for healthcare workforce planning, recruitment/retention, policy making, education planning, etc., is to perform comparative analysis over time. Although the data utilized for the supply report was from 2012 state licensure, the methodology utilized by the W VRHRC normalized (e.g. to remove duplicates, non-active, out-of-state, etc.) the state licensure data is assumed to be different from NCAHD normalization methodology. Therefore, in performing the comparative analysis proposed, we will utilize NCAHD’s enhanced state licensure (ESL) data for 2012. The comparative analysis was performed at both the county and zip code levels of geography with the results found tables (Appendices B & C: Primary Care Providers and All Providers Workforce Trend Analysis) and the following provider maps:
Physicians: Allopathic and Osteopathic

FIGURE 75 - ALL PHYSICIANS (MD, DO) COUNTY CHANGE ANALYSIS
Physician Assistants

**FIGURE 76 - PHYSICIAN ASSISTANT CHANGE ANALYSIS**

[Map showing changes in Physician Assistants across counties in West Virginia (2012-2014)]

- **West Virginia**: 37
- **Barbour**: 1
- **Berkeley**: 1
- **Boone**: 1
- **Buchs**: 0
- **Brooke**: 0
- **Cabell**: 16
- **Calhoun**: 0
- **Clay**: 1
- **Doddridge**: 0
- **Fayette**: 1
- **Gilmer**: 0
- **Grant**: 0
- **Greenbrier**: -3
- **Hampshire**: -1
- **Hancock**: 2
- **Hardy**: 1
- **Harrison**: -3
- **Jackson**: -1
- **Jefferson**: 1
- **Kanawha**: 4
- **Lewis**: -1
- **Lincoln**: 0
- **Logan**: 2
- **Marion**: -1
- **Marshall**: 2
- **Monongalia**: 0
- **Monroe**: 0
- **Morgan**: -1
- **Nicholas**: -1
- **Ohio**: -2
- **Pendleton**: 0
- **Pleasant**: 0
- **Pocahontas**: 0
- **Putnam**: 0
- **Raleigh**: 1
- **Randolph**: 3
- **Ritchie**: 0
- **Roane**: 1
- **Summers**: 0
- **Taylor**: 1
- **Tucker**: 0
- **Tyler**: 0
- **Upshur**: -1
- **Wayne**: 0
- **Webster**: 0
- **Wetzel**: 0
- **Wirt**: 1
- **Wood**: 0
- **Wyoming**: 0

*Data Source: West Virginia Board of Medicine (2012, 2016)*
FIGURE 77 - NURSE PRACTITIONER CHANGE ANALYSIS
HEALTHCARE WORKFORCE DEMAND

Primary Care Workforce

The importance of proximity of primary care workforce will be ever more important in 2014 as the number of individuals with health insurance seek access to primary care. Factoring in the demographic changes from the newly insured accessing care relative to safety net providers will be key in helping inform policy and decision makers in targeting their efforts. Healthcare is provided in regional patterns often controlled by geographic barrier, access to transportation and access to specialty providers.

Utilizing zip code boundaries, NCAHD analyzed the existence of primary care providers to populations and generated a table demonstrating the analysis of primary care physicians and primary care workforce to 10,000 population (See Appendix D - West Virginia Primary Care Workforce Analysis).

Aging Primary Care Workforce

In West Virginia, the average age for all of the Primary Care Workforce is 48 years, with primary care physicians average age at 50; Nurse Practitioners average at 46 years; and Physician Assistants average at 38 years.

Another key component in assessing the impact of demand upon the primary care workforce is the facts that not only are the patients they treat aging, but the entire healthcare workforce is aging too. A publication by the Bureau of Labor Statistics indicates that 30% of physicians are age 55 or older9.

As previously mentioned, the overall nursing workforce is also aging. On average in the U.S., the age of active dentists in metropolitan area is 49.6 years and 50.8 years in rural areas; the average age of a private practice dentist in a metropolitan area is 49.5 years and in a rural area is 52.2 years10.

Identifying areas where there are both an aging population and aging healthcare workforce is critical in strategic planning for healthcare training, recruitment and retention programs. As many of the healthcare workforce training programs plan for expansion, there are multiple benefits in using the portal to identify existing training sites and/ or those areas where patient populations are in greatest need. Additionally, the portal can be used to identify potential trainers and/or clinical training sites.

For the demand analysis, we looked at the distribution of the combined aging primary care workforce and individual primary care providers so that the stakeholders had multiple perspectives of this important issue. The results are portrayed both on their individual’s proximity and on their aggregate total compared to the total of their respective provider’s in the county (See Appendix E - West Virginia Aging Primary Care Workforce Analysis).
FIGURE 78 - AGING PRIMARY CARE PHYSICIANS
FIGURE 79 - AGING PHYSICIAN ASSISTANTS

The average age for physician assistants in West Virginia is 39.
The average age for nurse practitioners in West Virginia is 40.

FIGURE 80 - AGING NURSE PRACTITIONERS
Specialty Care Workforce

Estimating specialty care needs is an ever evolving exercise to identify those factors from the environment (e.g. healthcare determinants, etc.) that directly and indirectly influence not only the provision of healthcare but access. With the 2013 report, “A Workforce Demand Analysis”, various health outcomes were also integrated with their potentially reciprocating physicians to look at whether the existing supply was meeting needs or was in the proximity of those with needs. Due to the lack of current specialty physician ratios at the time of the creation of the report (2013), older, less accurate analysis was conducted. Therefore with the 2014 workforce demand report, NCAHD determined the state average of each specialty physician per 10,000 populations to determine need or surplus of specialty physician by county. The results of the analysis by county are found in Appendix F - West Virginia Specialty Physician Needs Analysis.

Each of the need analysis demand maps indicate the instate supply of that specialty physician that is actively practicing. Based upon the average physician to population ratio stipulated in the map (upper right side), we subtracted the current supply to determine the statewide surplus and individual county surplus/shortages. Being able to target areas of concern by correlating demand versus health outcome was the intended use of these maps.

Although there has been an increase in the number of medical students choosing a non-primary care specialty, their proximity to areas of need based upon various diseases/medical outcomes was the means chosen for this demand report to demonstration need. Eight physician specialists were identified by the WVRHA Healthcare Workforce Committee to be of significance in assessing their demand: Cardiologists, Nephrologists, Gastroenterologists, Orthopaedic Surgeons, Psychiatrists, Oncologists, General Surgeon and Endocrinologists.
FIGURE 81 - PSYCHIATRISTS NEEDS ANALYSIS
FIGURE 82 - ORTHOPAEDIC SURGEON NEEDS ANALYSIS
FIGURE 83 - ONCOLOGISTS NEEDS ANALYSIS
FIGURE 84 - NEPHROLOLOGISTS NEEDS ANALYSIS
FIGURE 85 -- GENERAL SURGEONS NEEDS ANALYSIS
FIGURE 86 - GASTROENTEROLOGISTS NEEDS ANALYSIS
FIGURE 87 - CARDIOLOGISTS NEEDS ANALYSIS
FIGURE 88 - ENDOCRINOLOGISTS NEEDS ANALYSIS

Endocrinologist Needs Ratio
- Surplus of Endocrinologists
- At or near meeting Endocrinologist needs
- Shortage of Endocrinologists

Data Source: West Virginia Board of Medicine (2014); West Virginia Board of Osteopathy (2014)

Average Endocrinologist ratio is 0.3 per 10,000 population.
Economic Impact of Chronic Disease in West Virginia

Aside from the importance placed by all stakeholders in assuring that workforce supply meets the needs of all West Virginians, a very important and evolving dialogue that needs to be considered is the economic impact of chronic diseases. Whether this knowledge directly changes the provision of healthcare is unknown but providing the stakeholder additional knowledge may help enrich their dialogue and/or help in focusing or refocusing their limited resources.

Recently, the Milken Institute published a report on their groundbreaking study, “An Unhealthy America: The Economic Impact of Chronic Disease”, which details the treatment costs and captures the lost worker productivity. It also describes the savings that could be generated if serious effort were made to improve American’s health. At the website, based upon their study (www.chronicdiseaseimpact.com), stakeholders can interactively view these statistics and download any of the information for free.

Although it is well published that the costs of treatment are ever increasing, the 2003 statistics provided by the Milken Institute are a good indication at a large scale (National, region and state level). In the U.S. alone, the overall total economic impact of the seven chronic diseases studied (diabetes, cancers, heart disease, hypertension, stroke, mental disorders, and pulmonary conditions) was $1,323.7 Billion dollars, of which 79% was from productivity loss. West Virginia ranks 50th by having the highest rates of the seven chronic diseases (see Figure 81 below). The overall economic impact of chronic diseases in West Virginia is $10.5 Billion dollars with productivity loss at 77% of this amount. It is projected that without intervention, this figure will rise to $28.2 Billion dollars.

![Figure 89 - Milken Institute Chronic Disease Index](image)
Most of the stakeholders are familiar with the federal shortage designations programs managed by the U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Health Profession. These programs are coordinated with each state’s state primary care office. In 2008, the National Center for Rural Health Works created an economic impact model to measure the economic impact of a rural primary care physician. Since the Primary Care Health Professional Shortage Area identifies where there are shortages, the application of the economic impact model to those shortage areas was performed to discern the costs of these types of shortages (see Figure 90 below).

**Figure 90 - Economic Impact Using 1:3000 PC Physician Ratio**
Utilizing this methodology, it was determined that the impact of West Virginia’s Primary Care Physician mal-distribution to the communities not being served was approximately $155.7 million dollars annually with a total job loss of approximately 3,979.

In December of 2012, the Robert Graham Center (RGC) published a new methodology for measuring primary care physician need by established a utilization rate based upon Medical Expenditure Panel Survey (MEPS) data. This new approach toward looking at demand for primary care services is based upon actual need rather than estimating the existence of shortage and is age adjusted. Because this methodology was designed to anticipate the additional patient load as the Affordable Care Act is implemented, it helps bring a more realistic view to current and future workforce demands than the current federal shortage program can produce through its methodology. Therefore, we have applied the RGC primary care utilization rate of 1.6 office visits per year by each West Virginia citizens. The results (see Figure 91 below)

Utilizing this methodology, it was determined that the impact of West Virginia’s Primary Care Physician mal-distribution to the communities not being served was approximately $462.6 million dollars annually with a total job loss of approximately 11,882, an approximate 66% increased negative economic impact.
FIGURE 91- ECONOMIC IMPACT OF PRIMARY CARE MALDISTRIBUTION USING PC UTILIZATION RATIO
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It is the mission of the West Virginia Rural Health Association to unite people, communities and organizations to strengthen rural health in West Virginia.

“The doctor of the future will give no medicines, but will interest his patients in the care of the human frame, in diet, and in the causes and prevention of disease.”

Thomas Edison

“Be the change in the world you wish to see.”

Gandhi
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APPENDIX A - NCAHD NATIONAL DATA COLLECTION PROCESS

Many of the national healthcare provider organizations have created and maintain their own membership-based data inventories for their profession but the aggregation of these datasets for public access or assurance of their data quality has been well publicized. Considering the well published disparities in membership association data, and other private sector data sources, we determined that because the quality and consistency of provider data is controlled through state mandated licensure processes, it would become the basis for our national healthcare workforce data.

Therefore, in 2007, the National Center for the Analysis of Healthcare Data (NCAHD) took on the daunting task of researching and identifying sources for healthcare workforce data to establish a process that could assure a consistent data quality that would meet the needs of the research, healthcare education planning and more effective policy and decision-making. Consequently, NCAHD has collected, processed, normalized and made spatial the 2008, 2009, 2010, 2011, 2012 and 2013 licensure data from each licensure board in all 50 states for Allopathic and Osteopathic physicians and 14 non-physician healthcare providers (Physicians, Audiologists, Certified Registered Nurse Anesthetists (CRNAs), Certified Nurse Midwives (CNMs), Chiropractors, Clinical Nurse Specialists (CNS), Dentists, Dental Hygienists, Naturopaths, Nurse Practitioners (NPs), Optometrists, Oral and Maxillofacial Surgeons, Pharmacists, Physical Therapists (PTs), Physician Assistants (Pas), Podiatrists, Psychologists, and Speech-Language Pathologists (SLPs).

Since the type of data collected on each provider in each state is mandated differently (with all collecting a basic core set of elements: licensure #, address, status), we created a standardized process for data collection and management that helps to improve the quality of the licensure data.

For each data collection cycle, we utilized our unique national data collection and management system coupled with spatial analysis performed in three separate processes: Procurement, Data Normalization and Spatial Analysis and Aggregation

1. **Procurement**: Our process starts with identifying the source of each of the providers’ state licensure information which is either their own provider licensure board or through a state repository. We contact each of these entities each year to determine any regulatory changes that may have transpired regarding either the collection or publication of the state licensure data and record any of those changes. Additionally, we determine the costs associated with the acquisition of the state licensure data and initiate the process to procure the data. After determining the costs and procurement process, we issue the check and wait for the state licensure board to send the data to our center for further processing.

2. **Data Normalization**: Upon receipt of each provider file, basic information is recorded as to date, number of raw records received and the format and if necessary, is converted into Excel spreadsheet format. Next, we conduct a thorough inventory of the data attributes and quality of the data and record this information in an automated data matrix. In the next step, we remove duplicates, retired, deceased, overseas military and inactive licensees based upon the information provided by the state licensure boards on their status, licensure number and provider name. These licensees are put into a separate
file for future reference. Our next step is to normalize the headers, names and addresses for each provider for each database in order to standardize the data and so that we manage the data for future research purposes.

3. **Handling of Multiple State Licenses:** Those licensees with multiple state licenses are assigned to the state in which their license is sent assuming that this is their main practice address. If the licensee has the license sent to a practice address within each of the states they are licensed in, it is assumed that they practice in each of those states to some degree throughout the year.

4. **Spatial Analysis and Aggregation:** At this point in the process, we will make the data spatial first through our automated geocoding process built within the GIS software. (We utilize the most current and spatially refined georeference file purchased separate from this grant for by the center.) We strive to geocode to the most refined level of geography provided through the licensure data. The resulting accuracy of the geocoding process is recorded as a part of each record. Providers that are not found through this process are identified through on-line internet searches.

After the data is made spatial, we segregate those providers that are in-state from all out-of-state providers and for the purposes of the HRSA grant, only aggregated the in-state providers to the county level. Our spatial aggregation process utilizes the most current county boundary file within the GIS. At the end of the spatial aggregation, we check the total number per state to the original in-state totals.

As a part of our data quality assurance process, we compare the county totals to the previous year’s state licensure county totals. For those numbers that are off by more than 5%, we go back through the entire process again including checking with the data source to inquire as to the large difference from the previous year. If there was a data processing error, it is caught upon re-processing the file. If the large change was due to migration of providers or other potential suggestion by the board, we indicate it within the comments section of the file.